

PROJECT TITLE : Nitrate Reduction by Controlled Fermentation  
PERIOD COVERED : September 26th - October 31st, 1980  
WRITTEN BY : C. Ruf

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## 1. TRIALS

### 1.1. Trial NINO 63

During the second part of this trial the fermenter was running at 33°C instead of 35°C (Ref. 1). At this lower temperature the process worked much better and therefore 33°C, or at least 32°C could be considered as a new basic working condition.

During the covered period the fermentation was affected for a few hours by two perturbations :

1) A failure of the pH probe on September 30th was not immediately detected. Therefore no more acid was added for several hours and consequently no more phosphates, because these are added as phosphoric acid mixed with the lactic acid by means of the pH regulation. Due to the want of phosphates the fermentation began to be less efficient and the extract was not fully denitrated. After addition of potassium phosphates by means of the additive line, the process recovered very quickly.

2) Since October 10th some electrical problems caused the addition of too much anti-foam agent into the fermenter. The high concentration of such suspended solids led to the clogging of the exhaust pipes which were cleaned and sterilized again.

### 1.2. Trial NINO 64

This trial has been running since October 27th and its objective is to check the ability of the fermentation to absorb large and sudden variations of  $\text{NO}_3\text{-N}$  concentration in the feed extract. First conclusions will be available for the next monthly report.

## 2. EVALUATION OF DENITRATION PROCESSES

2.1. Most of the analytical results from the NINO-RL trial in Richmond (Ref. 2) have been received (Ref. 3).

2.2. Mike Maher and John Machett from Process Engineering in Richmond were in Switzerland during the second week of October. The objective of their visit was to revise the engineering studies for RL denitration prepared by Process Engineering Company, PEC. After a short visit to the FTR factory in Neuchâtel they

were accompanied to PEC in Stäfa by Messrs C. Ruf and D. Schulthess.

Both aerobic and anaerobic processes were discussed (Ref. 4).

### 3. PILOT PLANT

See monthly report of October 1980 : "Pilot Plant Operations" by N. Lüthi.

### 4. STRIPS DENITRATION

4.1. A comparative trial will take place during the second week of November (Ref. 5). Two hundred pounds of Burley strips received from PM USA will be extracted and then recombined with fermented liquor. The procedure and a tentative schedule have been established (Ref. 6 and Ref. 7).

4.2. A brain storming session on the strips denitration concept on October 22nd led to a first draft proposal (Ref. 8). This document was discussed again in an extended meeting on October 27th.

### 5. REFERENCES

- Ref. 1 : Monthly report : "Nitrate Reduction by Controlled Fermentation", September 1980, C. Ruf.
- Ref. 2 : Monthly report : "Nitrate Reduction by Controlled Fermentation", August 1980, C. Ruf.
- Ref. 3 : Attachments to the minutes of denitration meeting, September 26th, 1980, S. Muller.
- Ref. 4 : Notebook No. 5, p. 39-42, C. Ruf.
- Ref. 5 : Telex from W. Gannon to M. Häusermann, October 22, 1980.
- Ref. 6 : "Procès-verbal de la séance du 22.10.1980", October 24, 1980, C. Ruf.
- Ref. 7 : Telex from H. Friedrich to W. Gannon, October 23, 1980.
- Ref. 8 : "Strips denitration : draft proposal", October 23, 1980, H. Friedrich.

  
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